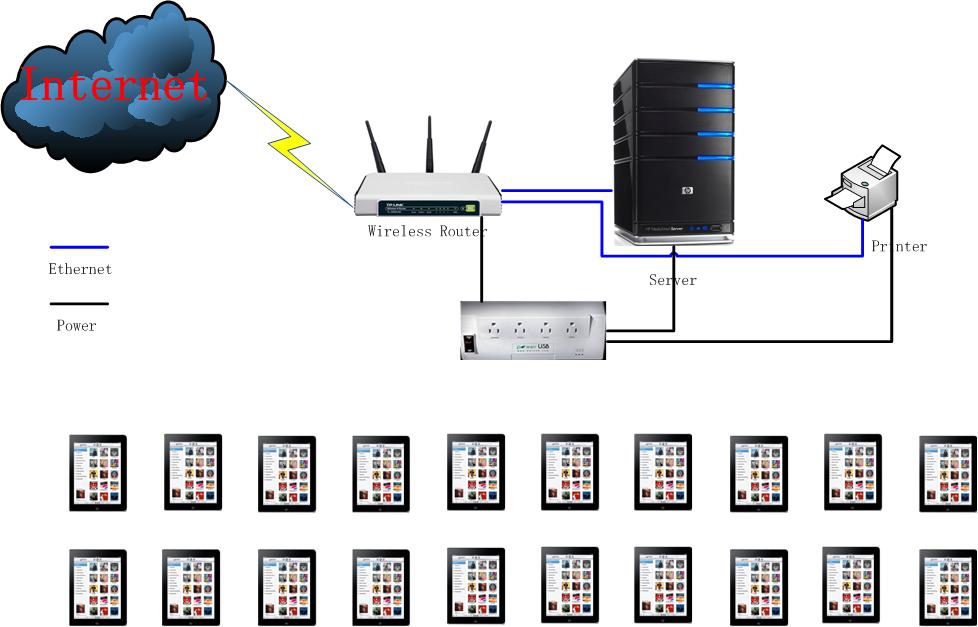
**Individual Project due 24:00 7 October, 2012 (to be loaded onto your wiki).**

**Name:** Fuhai Wei

Project - Thin client network for a small school using Tablet as client

e.g. <http://www.ywterminal.com/en/product.asp?id=96>



The project could concentrate on installing a thin client network for a small school with solar panels, gel batteries, inverter and a small network of 20 tablets which may include a server, printer and wifi router. The proposed network provides service to a classroom that has fluorescent lighting. Classes operate between the hours 8.30am to 3.30pm (7.00 hours)

Assumptions:

• The existing computer network is ON 5 days per week 24 hours per day

• The existing classroom lighting is ON 5 days per week 10 hours per day

**Individual Project**

1. Negotiate with the stakeholders to establish the extent to which sustainability is to be integrated

Answer:

Use a wireless router with modem connect to internet and 1 server for DNS and DHCP service. One printer for share print service. One PowerUSB power panel control the power supply for server, router and printer.

**Hardware**

□ renewable energy source

□ low powered hardware

□ energy efficient architecture

Summary: My Individual Project uses ….

**Software**

□ energy management software on server

**Printing**

□ local

□ online

□ to Pdf/wiki

2. Advise short term technology solutions to achieve reduction of power consumption

Answer:

Use the PowerUSB control the server, printer and router. We can shutdown the server and power off the router and printer scheme after 3.30pm and startup the server and power on the printer and router before 8.30am every weekday.

3. Identify energy usage within the scope of the ICT project and provide a detailed report

Answer:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Condition** | **Power consumption**  **(watts)** | | | | **Notes** |
|  | **Tablet** | **Server** | **Router** | **Printer** |  |
| OFF | **0.3** | **19** | **0** | **0** |  |
| MAX BOOT | **3.5** | **42** | **5** | **16** |  |
| IDLE | **3.2** | **42** | **5** | **16** |  |
| Wordprocessing | **3.3** | **44** |  |  |  |
| Spreadsheets | **3.3** | **44** |  |  |  |
| Web browsing  <http://news.bbc.co.uk/2/hi/programmes/click_online/default.stm> | **3.1** |  |  |  |  |
| Low level music  <http://grooveshark.com/#/s/Fall+At+Your+Feet/3KIZB0?src=5> | **3.3** |  |  |  |  |
| Low level video  <http://www.joost.com/39w1yk49/#/?video_info=33p1yw1t> | **3.3** |  |  |  |  |
| Monitor for server |  | **16** |  |  |  |
| Printing(Local) | **3.3** | **43** |  | **16** |  |
| Printing(Wiki) | **3.3** | **0** |  |  |  |

**PowerPoint Presentation**

Create a PowerPoint presentation of your individual Project with the following slides:

1. The Basics of preparing to integrate sustainability into ICT planning and design projects;
2. ICT sustainability from a business standpoint;
3. Energy efficiency as a stepping stone to sustainability;
4. Individual Project Strategy
5. Network operation and security;
6. Sketch of the recommended project system;
7. Test results
8. Short term technology solutions to achieve reduction of power consumption;
9. Energy usage within the ICT project - graph
10. Recommendations and Conclusion.

**Individual Report**

**For your individual project answer the following:**

1. Explain how sustainability can be integrated into your individual Project
2. Research and identify suitable technology solutions applicable to the project
3. Explain the power consumption data compared to benchmarks
4. Advise how sustainable management principles may be applied to your individual project resulting in reduced environmental impact
5. Provide key performance indicators (KPI) - sustainability performance for your individual Project

**Key Performance Indicators**

|  |  |  |  |
| --- | --- | --- | --- |
| **Hardware** | **SD-KPI 1: Energy / greenhouse gas efficiency of production / products in use**  **(tons CO2)** | **SD-KPI 2: Proportion of products with “Design for Environment” / Eco-Label**  **(√)**  **or (x)** | **SD-KPI 3: Emissions of (hazardous) waste and toxic materials**  **Yes or No** |
| Server | 0.045x24x5x52x6.8956/10000=0.1936 | **(x)** | NO |
| Tablet x 20 | Total for each 0.009x7x5x52x6.8956/10000=0.0113  Total 20 = 0.2259 | **(√)** | NO |
| Wireless router | 0.007x24x5x52x6.8956/10000=0.0301 | **(√)** | NO |
| Printer | 0.016x24x5x52x6.8956/10000=0.0688 | **(√)** | NO |
| Monitor | 0.018x7x5x52x6.8956/10000=0.0226  1 Monitor for server | **(√)** | NO |

1. Advise what actions could improve the KPI’s for your Individual Project which foster sustainability and environmental best practice

* Choosing energy efficient hardware
* Using power management software
* Selecting energy efficient architecture – with longer life cycle, better utility
* Using renewable energy
* Reducing e-waste

1. Evaluate the estimated CO2 emissions with comparable benchmarks; and Estimate the carbon dioxide (CO2) emissions for the Individual Project; and Individual Project + Recommended Actions

|  |  |  |  |
| --- | --- | --- | --- |
| **Hardware** | **Benchmark**  **(tons CO2)** | **Individual Project**  **(tons CO2)** | **Individual Project**  **+**  **Recommended Actions**  **(tons CO2)** |
| Server | 0.2718 | 0.1936 | From 3.30pm to 8.30 am and weekend power off |
| Tablet x 20 | 0.0483 | 0.2259 | From 3.30pm to 8.30 am and weekend power off |
| Wireless router | 0.0423 | 0.0301 | From 3.30pm to 8.30 am and weekend power off |
| Printer | 0.0966 | 0.0688 | From 3.30pm to 8.30 am and weekend power off, When no print job ,let’s sleep |
| Monitor | 0.0260 | 0.0226 | Power off when doesn’t need manage the server |

1. Make recommendations in order of priority and give estimates of implementation costs on integration of sustainability for other ICT projects; and Estimate potential energy savings and payback periods for recommended actions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Recommendation** | **Priority** | **Implementation Cost** | **Energy Saving** | **Payback Period** |
| Schedule power off server | 1 | 119 | 79% | 238Days |
| Schedule power off the printer | 2 | 79% |
| Schedule power off the router | 3 | 79% |